

GenCore version 5.1.4_p5_4578
Copyright (c) 1993 - 2003 CompuGen Ltd.

OM protein - protein search, using sw model

Run on: March 17, 2003, 07:13:51 ; Search time 6.83969 Seconds
(without alignments)
194.050 Million cell updates/sec

Title: US-09-787-082-7

Perfect score: 188

Sequence: 1 GLPVCKGKAGKCSRLMYDCCTGSCRSRKCTRG 32

Scoring table: BLOSUM62

Gapop 10.0 , Gapext 0.5

Searched: 112892 seqs, 41476328 residues

Total number of hits satisfying chosen parameters: 112892

Minimum DB seq length: 0

Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%

Maximum Match 100%

Listing first 45 summaries

Database : SwissProt_40.*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

Result No.	Score	Query Match	Length	ID	Description
1	151	80.3	71	1	P05484 conus magus
2	124	66.0	25	1	P58918 conus catus
3	122.5	65.2	26	1	P58919 conus catus
4	120	63.8	25	1	P05485 conus magus
5	115	61.2	27	1	P58916 conus conso
6	115	61.2	71	1	Q9x2k2 conus stria
7	115	61.2	71	1	P58917 conus catus
8	114	60.6	73	1	P58920 conus catus
9	112.5	59.8	29	1	P37300 conus magus
10	104	55.3	29	1	Q26350 conus magus
11	98	52.1	72	1	P28881 conus stria
12	75.5	40.2	72	1	P05483 conus geogr
13	64	34.0	72	1	P80247 mytilus edu
14	59.5	31.6	66	1	P37361 rattus norv
15	59.5	31.6	68	1	P28184 mus musculus
16	59	31.4	72	1	P80246 mytilus edu
17	58	30.9	27	1	P24159 conus texti
18	58	30.9	72	1	O62554 mytilus edu
19	58	30.9	78	1	P18511 conus texti
20	57	30.3	64	1	P04734 stronglyloce
21	57	30.3	65	1	Q27287 stronglyloce
22	57	30.3	72	1	P28880 conus stria
23	57	30.3	72	1	P80249 mytilus edu
24	56.5	30.1	63	1	P15786 columba liv
25	56.5	30.1	73	1	P01522 conus geogr
26	56.5	30.1	1389	1	P18171 drosophila
27	56	29.8	64	1	P55953 stercorinus
28	56	29.8	72	1	Q9x215 conus stria
29	55.5	29.5	27	1	P58914 conus radia
30	55.5	29.5	61	1	P11957 oryctolagus
31	55.5	29.5	61	1	P80289 oryctolagus
32	55.5	29.5	61	1	P80291 oryctolagus
33	55.5	29.5	61	1	P80292 oryctolagus

RESULT 1				
ID	CXOA_CONMA	STANDARD;	PRT;	71 AA.
AC	P05484;			
DT	01-NOV-1988 (Rel. 09, Created)			
DT	15-JUN-2002 (Rel. 41, Last sequence update)			
DT	15-JUN-2002 (Rel. 41, Last annotation update)			
DE	Omega-conotoxin MVIIA precursor (SNX-111) (Ziconotide).			
OS	Conus magus (Magus cone).			
OC	Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;			
OC	Neogastropoda; Conoidea; Conidae; Conus.			
OX	NCBI_TaxID=6492;			
RN	[1]			
RP	SEQUENCE FROM N.A.			
RC	TISSUE=Venom duct;			
RX	PubMed=10938268;			
RA	Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,			
RA	Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,			
RA	Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;			
RT	"Novel Omega-conotoxins from Conus catus discriminate among neuronal			
RT	calcium channel subtypes.";			
RL	J. Biol. Chem. 275:35335-35344(2000).			
RN	[2]			
RP	SEQUENCE OF 46-70.			
RX	MEDLINE=86070213; PubMed=4071055;			
RA	Olivera B.M., Gray W.R., Zeikus R.D., McIntosh J.M., Varga J.,			
RA	Rivier J.E., de Santos V., Cruz L.J.;			
RT	"Peptide neurotoxins from fish-hunting cone snails.";			
RL	Science 230:1338-1343(1985).			
RN	[3]			
RP	SEQUENCE OF 46-70.			
RX	MEDLINE=87299637; PubMed=2441741;			
RA	Olivera B.M., Cruz L.J., de Santos V., Lecheminant G.W., Griffin D.,			
RA	Zeikus R.D., McIntosh J.M., Galyean R., Varga J., Gray W.R.,			
RA	Rivier J.E.;			
RT	"Neuronal calcium channel antagonists. Discrimination between calcium			
RT	channel subtypes using omega-conotoxin from Conus magus venom.";			
RL	Biochemistry 26:2086-2090(1987).			
RN	[4]			
RP	DISULFIDE BONDS.			
RX	PubMed=8537186;			
RA	Chung D., Gaur S., Bell J.R., Ramachandran J., Nadasdi L.;			
RT	"Determination of disulfide bridge pattern in omega-conopeptides.";			
RT	Int. J. Pept. Protein Res. 46:320-325(1995).			
RN	[5]			
RP	SYNTHESIS, AND MUTAGENESIS OF LYS-47 AND TYR-58.			
RX	PubMed=7826361;			
RA	Kim J.I., Takahashi M., Ohtake A., Wakamiya A., Sato K.;			
RT	"Tyrl3 is essential for the activity of omega-conotoxin MVIIA and			
RT	GVIA, specific N-type calcium channel blockers.";			
RL	Biochem. Biophys. Res. Commun. 206:449-454(1995).			
RN	[6]			
RP	STRUCTURE BY NMR.			
RX	MEDLINE=95367555; PubMed=7640281;			
RA	Kohn T., Kim J.-I., Kobayashi K., Kodera Y., Maeda T., Sato K.;			
RT	"Three-dimensional structure in solution of the calcium channel			

34	55	29.3	61	1	MT1A_HORSE	P02800	equus cabal
35	55	29.3	68	1	MT3_HORSE	P37360	equus cabal
36	55	29.3	68	1	MT3_HUMAN	P25713	homo sapien
37	55	29.3	68	1	MT3_PIG	P55944	sus scrofa
38	55	29.3	72	1	CX01_CONST	Q9x214	conus stria
39	55	29.3	491	1	K2M2_SHEEP	P15241	ovis aries
40	55	29.3	615	1	FA12_HUMAN	P00748	homo sapien
41	55	29.3	813	1	YTQJ_CAEEL	Q19673	caenorhabdi
42	55	29.3	860	1	LDLR_HUMAN	P01130	homo sapien
43	54.5	29.0	26	1	CX06_CONTU	P58915	conus tulip
44	54.5	29.0	26	1	CX07_CONTE	P56714	conus texti
45	54	28.7	863	1	AD17_DROME	Q9vac5	drosophila

ALIGNMENTS

blocker omega-conotoxin MVIIA.";
 Biochemistry 34:10256-10265(1995).
 [7]
 RP STRUCTURE BY NMR.
 RX PubMed=7656969;
 RA Basus V.J., Nadasdi L., Ramachandran J., Miljanich G.P.;
 RT "Solution structure of omega-conotoxin MVIIA using 2D NMR
 spectroscopy.";
 RL FEBS Lett. 370:163-169(1995).
 [8]
 RN
 RN STRUCTURE BY NMR.
 RP MEDLINE=97070382; PubMed=8913308;
 RX Nielsen K.J., Thomas L., Lewis R.J., Alewood P.F., Craik D.J.;
 RA "A consensus structure for omega-conotoxins with different
 selectivities for voltage-sensitive calcium channel subtypes:
 comparison of MVIIA, SVIB and SNX-202.";
 RL J. Mol. Biol. 263:297-310(1996).
 [9]
 RN
 RN STRUCTURE BY NMR.
 RP PubMed=10373375;
 RX Nielsen K.J., Adams D., Thomas L., Bond T., Alewood P.F., Craik D.J.,
 RA Lewis R.J.;
 RT "Structure-activity relationships of omega-conotoxins MVIIA, MVIIC and
 14 loop splice hybrids at N and P/Q-type calcium channels.";
 RL J. Mol. Biol. 289:1405-1421(1999).
 [10]
 RN
 RN STRUCTURE BY NMR.
 RP PubMed=1074778;
 RX Atkinson R.A., Kieffer B., DeJaegere A., Sirockin F., Lefevre J.-F.;
 RA "Structural and dynamic characterization of omega-conotoxin MVIIA: the
 binding loop exhibits slow conformational exchange.";
 RL Biochemistry 39:3908-3919(2000).
 [11]
 RN
 RN STRUCTURE BY NMR.
 RP MEDLINE=21243158; PubMed=11344322;
 RX Goldenberg D.P., Koehn R.E., Gilbert D.E., Wagner G.;
 RA "Solution structure and backbone dynamics of an omega-conotoxin
 precursor.";
 RL Protein Sci. 10:538-550(2001).
 CC
 CC -1- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
 and block voltage-sensitive calcium channels (VSCC). This toxin
 blocks N-type calcium channels.
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- TISSUE SPECIFICITY: Expressed by the venom duct.
 CC -1- PHARMACEUTICAL: Is under clinical trial by Neurox. It blocks acute
 pain in patients who no longer obtain relief from opiate drugs. It
 is 100 to 1000 times more potent than morphine. By blocking
 calcium channels it disables nerves that transmit pain signals.
 CC -1- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
 FAMILY.
 CC -1- DATABASE: NMBP=Ziconotide Source; NOTE=Web site on ziconotide;
 WWW="http://docmd.com/ziconotide/".
 DR PIR; C60133; C60133.
 DR PIR; JH0700; JH0700.
 DR PDB; 1ONG; 03-APR-96.
 DR PDB; 1MVI; 12-AUG-97.
 DR PDB; 1DW4; 01-MAR-00.
 DR PDB; 1DW5; 01-MAR-00.
 DR PDB; 1FEO; 23-AUG-00.
 KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
 KW Amidation; Signal; 3D-structure; Pharmaceutical.
 FT SIGNAL 1 22
 FT PROPEP 23 45
 FT PEPTIDE 46 70
 FT DISULFID 46 61
 FT DISULFID 53 65
 FT DISULFID 60 70
 FT MOD_RES 70 70
 FT MUTAGEN 47 47
 FT MUTAGEN 58 58
 FT SEQUENCE 71 AA; 7587 MW; E2A32725C81AF31D CRC64;
 Query Match. 80.3%; Score 151; DB 1; Length 71;

Best Local Similarity 100.0%; Pred. No. 1.3e-11;
 Matches 25; Conservative 0; Mismatches 0; Indels 0; Gaps 0;
 QY 5 CKGKAGKCSRLMYDCCTGSCRSKGC 29
 ||||| : |||||
 DB 46 CKGKAGKCSRLMYDCCTGSCRSKGC 70
 ||||| : |||||
 RESULT 2
 CXOB_CONCT STANDARD; PRT; 25 AA.
 ID AC P58918;
 DT 15-JUN-2002 (Rel. 41, Created)
 DT 15-JUN-2002 (Rel. 41, Last sequence update)
 DT 15-JUN-2002 (Rel. 41, Last annotation update)
 DE Omega-conotoxin CVIB.
 OS Conus catus (Cat cone).
 OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
 OC Neogastropoda; Conoidea; Conidae; Conus.
 OX NCBI_TaxID=101291;
 RN [1]
 RP SEQUENCE, AND SYNTHESIS.
 RC TISSUE=Venom;
 RX PubMed=10938268;
 RA Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
 RA Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
 RA Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
 RT "Novel omega-conotoxins from Conus catus discriminate among neuronal
 calcium channel subtypes.";
 RL J. Biol. Chem. 275:35335-35344(2000).
 CC -1- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
 and block voltage-sensitive calcium channels (VSCC) (By
 similarity). This toxin blocks N-, P-, and Q-type calcium
 channels.
 CC -1- SUBCELLULAR LOCATION: Secreted.
 CC -1- TISSUE SPECIFICITY: Expressed by the venom duct.
 CC -1- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
 FAMILY.
 KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
 KW Amidation.
 FT DISULFID 1 16 BY SIMILARITY.
 FT DISULFID 8 20 BY SIMILARITY.
 FT DISULFID 15 25 BY SIMILARITY.
 FT MOD_RES 25 25 AMIDATION.
 SQ SEQUENCE 25 AA; 2717 MW; D41A95F5AFA9552 CRC64;
 Query Match 66.0%; Score 124; DB 1; Length 25;
 Best Local Similarity 76.0%; Pred. No. 8.7e-09;
 Matches 19; Conservative 2; Mismatches 4; Indels 0; Gaps 0;
 QY 5 CKGKAGKCSRLMYDCCTGSCRSKGC 29
 ||||| : |||||
 DB 1 CKGKAGKCSRLMYDCCTGSCRSKGC 25
 ||||| : |||||
 RESULT 3
 CXOB_CONCT STANDARD; PRT; 26 AA.
 ID AC P58919;
 DT 15-JUN-2002 (Rel. 41, Created)
 DT 15-JUN-2002 (Rel. 41, Last sequence update)
 DT 15-JUN-2002 (Rel. 41, Last annotation update)
 DE Omega-conotoxin CVIC.
 OS Conus catus (Cat cone).
 OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
 OC Neogastropoda; Conoidea; Conidae; Conus.
 OX NCBI_TaxID=101291;
 RN [1]
 RP SEQUENCE, AND SYNTHESIS.
 RC TISSUE=Venom;
 RX PubMed=10938268;
 RA Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
 RA Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,

RA Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
 RT "Novel omega-conotoxins from *Conus catus* discriminate among neuronal
 RL calcium channel subtypes.";
 J. Biol. Chem. 275:35335-35344(2000).
 CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
 CC and block voltage-sensitive calcium channels (VSCC) (By
 CC similarity). This toxin blocks N-, P-, and Q-type calcium
 CC channels.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
 CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
 CC FAMILY.
 KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
 KW Amidation.
 FT DISULFID 1 16 BY SIMILARITY.
 FT DISULFID 8 20 BY SIMILARITY.
 FT DISULFID 15 26 BY SIMILARITY.
 FT MOD_RES 26 26 AMIDATION.
 SQ SEQUENCE 26 AA; 2790 MW; 56EFC382335C4A8B CRC64;
 Query Match 65.2%; Score 122.5; DB 1; Length 26;
 Best Local Similarity 80.8%; Pred. No. 1.3e-08;
 Matches 21; Conservative 1; Mismatches 3; Indels 1; Gaps 1;
 Qy 5 CKGKGAKCSRLMYDCTGSC-RSGKC 29
 ||||| ||:||||||| |||||
 Db 1 CKGKGQSCSKLWYDCTGSCSRGKC 26
 ||||| ||:||||||| |||||
 RESULT 4
 CXOB_CONMA STANDARD; PRT; 25 AA.
 ID CXOB_CONMA STANDARD; PRT; 25 AA.
 AC P05485;
 DT 01-NOV-1988 (Rel. 09, Created)
 DT 01-NOV-1988 (Rel. 09, Last sequence update)
 DT 15-JUN-2002 (Rel. 41, Last annotation update)
 DE Omega-conotoxin MWIb (SNX-159).
 OS *Conus magus* (Magus cone).
 OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
 OC Neogastropoda; Conoidea; Conidae; Conus.
 OX NCBI_TaxID=6492;
 RN [1]
 RP SEQUENCE.
 RX MEDLINE=87299637; PubMed=2441741;
 RA Olivera B.M., Cruz L.J., de Santos V., Lecheminant G.W., Griffin D.,
 RA Zeikus R.D., McIntosh J.M., Galyean R., Varga J., Gray W.R.,
 RA Rivier J.E.;
 RT "Neuronal calcium channel antagonists. Discrimination between calcium
 RT channel subtypes using omega-conotoxin from *Conus magus* venom.";
 RL Biochemistry 26:2086-2090(1987).
 CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
 CC and block voltage-sensitive calcium channels (VSCC).
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
 CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
 CC FAMILY.
 DR PIR; B34115; B34115.
 DR PIR; JH0701; JH0701.
 DR HSSP; P05484; MWI.
 KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
 KW Amidation.
 FT DISULFID 1 16
 FT DISULFID 8 20
 FT DISULFID 15 25
 FT MOD_RES 25 25
 SQ SEQUENCE 25 AA; 2626 MW; E4B9CE5EFAA3734D CRC64;
 Query Match 63.8%; Score 120; DB 1; Length 25;
 Best Local Similarity 76.0%; Pred. No. 2.6e-08;
 Matches 19; Conservative 0; Mismatches 6; Indels 0; Gaps 0;
 Qy 5 CKGKGAKCSRLMYDCTGSCSRGKC 29
 ||||| ||:||||||| |||||

Db 1 CKGKGASCHRTSYDCCGTCNCRGKC 25
 RESULT 5
 CXO7_CONCN STANDARD; PRT; 27 AA.
 ID CXO7_CONCN STANDARD; PRT; 27 AA.
 AC P58916;
 DT 15-JUN-2002 (Rel. 41, Created)
 DT 15-JUN-2002 (Rel. 41, Last sequence update)
 DT 15-JUN-2002 (Rel. 41, Last annotation update)
 DE Omega-conotoxin CnVIIA.
 OS *Conus consors* (Singed cone).
 OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
 OC Neogastropoda; Conoidea; Conidae; Conus.
 OX NCBI_TaxID=101297;
 RN [1]
 RP SEQUENCE, SYNTHESIS, AND MASS SPECTROMETRY.
 RC TISSUE=Venom;
 RX PubMed=11724570;
 RA Favreau P., Gilles N., LamThanh H., Bournaud R., Shimahara T.,
 RA Bouet F., Laboute P., Letourneux Y., Menez A., Molgo J., Le Gall F.;
 RT "A new omega-conotoxin that targets N-type voltage-sensitive calcium
 RT channels with unusual specificity.";
 RL Biochemistry 40:14567-14575(2001).
 CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
 CC and block voltage-sensitive calcium channels (VSCC). This toxin
 CC blocks N-type calcium channels, but unexpectedly, does not show
 CC any blocking activity at amphibian neuromuscular junction. Causes
 CC shaking activity, and, at higher doses, causes mild tremors when
 CC injected intracerebroventricularly into mice. Causes paralysis,
 CC and, at higher doses, causes death when injected intramuscularly
 CC into fish.
 CC -!- SUBCELLULAR LOCATION: Secreted.
 CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
 CC -!- MASS SPECTROMETRY: MW=2847.74; METHOD=Electrospray.
 CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
 CC FAMILY.
 KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
 KW Hydroxylation: Amidation.
 FT BINDING 13 13 ESSENTIAL FOR CALCIUM CHANNEL BINDING (BY
 FT SIMILARITY).
 FT DISULFID 1 16 BY SIMILARITY.
 FT DISULFID 8 20 BY SIMILARITY.
 FT DISULFID 15 27 BY SIMILARITY.
 FT MOD_RES 7 7 HYDROXYLATION.
 FT MOD_RES 27 27 AMIDATION.
 SQ SEQUENCE 27 AA; 2839 MW; B9DEFD1491F2CB4A CRC64;
 Query Match 61.2%; Score 115; DB 1; Length 27;
 Best Local Similarity 74.1%; Pred. No. 1e-07;
 Matches 20; Conservative 2; Mismatches 3; Indels 2; Gaps 1;
 Qy 5 CKGKGAKCSRLMYDCTGSCRS--GKC 29
 ||||| ||:||||||| |||||
 Db 1 CKGKGAPCTRLMYDCCGSCSSKGRGKC 27
 ||||| ||:||||||| |||||
 RESULT 6
 CXO3_CONST STANDARD; PRT; 71 AA.
 ID CXO3_CONST STANDARD; PRT; 71 AA.
 AC Q9XZK2;
 DT 16-OCT-2001 (Rel. 40, Created)
 DT 16-OCT-2001 (Rel. 40, Last sequence update)
 DT 15-JUN-2002 (Rel. 41, Last annotation update)
 DE Omega-type conotoxin SO3 precursor.
 OS SO3.
 OS *Conus striatus* (Striated cone).
 OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
 OC Neogastropoda; Conoidea; Conidae; Conus.
 OX NCBI_TaxID=6493;
 RN [1]
 RP SEQUENCE FROM N.A.
 RC TISSUE=Venom duct;

```

RX MEDLINE-20037955; PubMed-10573284;
RA Lu B.-S., Yu F., Zhao D., Huang P.-T., Huang C.-F.;
RT "Conopeptides from Conus striatus and Conus textile by cDNA
RL cloning.";
RL Peptides 20:1139-1144(1999).
CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC and block voltage-sensitive calcium channels (VSCC) (By
CC similarity).
CC -!- SUBCELLULAR LOCATION: Secreted (By similarity).
CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC FAMILY.
CC -----
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (see http://www.isb-sib.ch/announce/
CC or send an email to license@isb-sib.ch).
CC -----
DR EMBL; AF146348; AAD31908.1; -.
DR HSSP; P05484; LMVI.
DR InterPro: IPR004214; Conotoxin.
DR Pfam: PF02950; Conotoxin; 1.
KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW Signal; Amidation.
FT SIGNAL 1 22 POTENTIAL.
FT PROPEP 23 44 POTENTIAL.
FT PEPTIDE 45 70 OMEGA-TYPE CONOTOXIN SO3.
FT DISULFID 46 61 BY SIMILARITY.
FT DISULFID 53 65 BY SIMILARITY.
FT DISULFID 60 70 BY SIMILARITY.
FT MOD_RES 70 70 AMIDATION (G-71 PROVIDE AMIDE GROUP)
FT SQ SEQUENCE 71 AA; 7628 MW; CE7070DCE309AD73 CRC64;

Query Match 61.2%; Score 115; DB 1; Length 71;
Best Local Similarity 72.0%; Pred. No. 2.2e-07;
Matches 18; Conservative 2; Mismatches 5; Indels 0; Gaps 0;

QY 5 CKGKGAKCSRLMYDCCTGSCRSRGC 29
II I III: I:IIIIIIIIII
DB 46 CKAAGKPCSRITAYNCCTGSCRSRGC 70

RESULT 7
CXOA_CONCT STANDARD; PRT; 71 AA.
AC P58917;
DT 15-JUN-2002 (Rel. 41, Created)
DT 15-JUN-2002 (Rel. 41, Last sequence update)
DE Omega-conotoxin CVIA precursor.
OS Conus catus (Cat cone).
OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC Neogastropoda; Conoidea; Conidae; Conus.
OX NCBI_TaxID=101291;
RN [1]
RP SEQUENCE FROM N.A., SEQUENCE OF 46-70, AND SYNTHESIS.
RP TISSUE=Venom duct, and Venom;
RX PubMed=10938268;
RA Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
RA Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT calcium channel subtypes.";
RL J. Biol. Chem. 275:35335-35344(2000).
CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC and block voltage-sensitive calcium channels (VSCC) (By
CC similarity). This toxin blocks N-type calcium channels.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC FAMILY.
KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW Amidation; Signal.
FT SIGNAL 1 22 POTENTIAL.
FT PROPEP 23 45 OMEGA-CONOTOXIN CVID.
FT PEPTIDE 46 72 BY SIMILARITY.
FT DISULFID 46 61 BY SIMILARITY.
FT DISULFID 53 65 BY SIMILARITY.
FT DISULFID 60 72 BY SIMILARITY.
FT MOD_RES 72 72 AMIDATION (G-73 PROVIDE AMIDE GROUP).
FT SQ SEQUENCE 73 AA; 7748 MW; C4CEBD30C77DAEC3 CRC64;

Query Match 60.6%; Score 114; DB 1; Length 73;
Best Local Similarity 70.4%; Pred. No. 2.9e-07;
Matches 19; Conservative 3; Mismatches 3; Indels 2; Gaps 1;

QY 5 CKGKGAKCSRLMYDCCTGSCRS--GKC 29
II IIIII:IIIIIIIIII
DB 46 CKSKGAKCSKLMYDCGSCSGCTVGRC 72

RESULT 9

```

```

CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC FAMILY.
KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW Amidation; Signal.
FT SIGNAL 1 22 POTENTIAL.
FT PROPEP 23 45 OMEGA-CONOTOXIN CVIA.
FT PEPTIDE 46 70 BY SIMILARITY.
FT DISULFID 46 61 BY SIMILARITY.
FT DISULFID 53 65 BY SIMILARITY.
FT DISULFID 60 70 BY SIMILARITY.
FT MOD_RES 70 70 AMIDATION (G-71 PROVIDE AMIDE GROUP).
FT SQ SEQUENCE 71 AA; 7665 MW; B99D9C7C74996D01 CRC64;

Query Match 61.2%; Score 115; DB 1; Length 71;
Best Local Similarity 72.0%; Pred. No. 2.2e-07;
Matches 18; Conservative 1; Mismatches 6; Indels 0; Gaps 0;

QY 5 CKGKGAKCSRLMYDCCTGSCRSRGC 29
II I III: IIIIIIIIIII
DB 46 CKSTGASCRRTSYDCCTGSCRSRGC 70

RESULT 8
CXOD_CONCT STANDARD; PRT; 73 AA.
AC P58920;
DT 15-JUN-2002 (Rel. 41, Created)
DT 15-JUN-2002 (Rel. 41, Last sequence update)
DE Omega-conotoxin CVID precursor.
OS Conus catus (Cat cone).
OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC Neogastropoda; Conoidea; Conidae; Conus.
OX NCBI_TaxID=101291;
RN [1]
RP SEQUENCE FROM N.A., SEQUENCE OF 46-72, SYNTHESIS, AND STRUCTURE BY
RP NMR.
RX TISSUE=Venom duct, and Venom;
RX PubMed=10938268;
RA Lewis R.J., Nielsen K.J., Craik D.J., Loughnan M.L., Adams D.A.,
RA Sharpe I.A., Luchian T., Adams D.J., Bond T., Thomas L., Jones A.,
RA Matheson J.-L., Drinkwater R., Andrews P.R., Alewood P.F.;
RT "Novel omega-conotoxins from Conus catus discriminate among neuronal
RT calcium channel subtypes.";
RL J. Biol. Chem. 275:35335-35344(2000).
CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
CC and block voltage-sensitive calcium channels (VSCC) (By
CC similarity). This toxin blocks N-type calcium channels.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
CC FAMILY.
KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW Amidation; Signal.
FT SIGNAL 1 22 POTENTIAL.
FT PROPEP 23 45 OMEGA-CONOTOXIN CVID.
FT PEPTIDE 46 72 BY SIMILARITY.
FT DISULFID 46 61 BY SIMILARITY.
FT DISULFID 53 65 BY SIMILARITY.
FT DISULFID 60 72 BY SIMILARITY.
FT MOD_RES 72 72 AMIDATION (G-73 PROVIDE AMIDE GROUP).
FT SQ SEQUENCE 73 AA; 7748 MW; C4CEBD30C77DAEC3 CRC64;

Query Match 60.6%; Score 114; DB 1; Length 73;
Best Local Similarity 70.4%; Pred. No. 2.9e-07;
Matches 19; Conservative 3; Mismatches 3; Indels 2; Gaps 1;

QY 5 CKGKGAKCSRLMYDCCTGSCRS--GKC 29
II IIIII:IIIIIIIIII
DB 46 CKSKGAKCSKLMYDCGSCSGCTVGRC 72

RESULT 9

```

```

CXOC_CONNA
ID CXOC_CONNA STANDARD; PRT; 29 AA.
AC P37300;
DT 01-OCT-1994 (Rel. 30, Created)
DT 01-OCT-1994 (Rel. 30, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Omega-conotoxin MVIIC precursor (SNX-230) (Fragment).
OS Conus magus (Magus cone).
OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC Neogastropoda; Conoidea; Conidae; Conus.
OX NCBI_TaxID=6492;
RN [1]
RP SEQUENCE FROM N.A., AND SYNTHESIS.
RX MEDLINE=92337922; PubMed=1352986;
RA Hillyard D.R., Monje V.D., Mintz I.M., Bean B.P., Nadasdi L.,
RA Ramachandran J., Miljanich G.P., Azimi-Zoonooz A., McIntosh J.M.,
RA Cruz L.J., Imperial J.S., Olivera B.M.;
RA "A new Conus peptide ligand for mammalian presynaptic Ca2+ channels.";
RL Neuron 9:69-77(1992).
RN [2]
RP STRUCTURE BY NMR.
RX MEDLINE=95248539; PubMed=7731037;
RA Parr-Jones S., Miljanich G.P., Nadasdi L., Ramachandran J.,
RA Basus V.J.;
RA "Solution structure of omega-conotoxin MVIIC, a high affinity ligand
of P-type calcium channels, using 1H NMR spectroscopy and complete
relaxation matrix analysis.";
RL J. Mol. Biol. 248:106-124(1995).
RN [3]
RP STRUCTURE BY NMR.
RX PubMed=10373375;
RA Nielsen K.J., Adams D., Thomas L., Bond T., Alewood P.F., Craik D.J.,
RA Lewis R.J.;
RA "Structure-activity relationships of omega-conotoxins MVIIC and
RT 14 loop splice hybrids at N and P/Q-type calcium channels.";
RL J. Mol. Biol. 289:1405-1421(1999).
RN [4]
RP MUTAGENESIS OF TYR-15.
RX PubMed=7677735;
RA Kim J.I., Takahashi M., Martin-Moutot N., Seagar M.J., Ontake A.,
RA Sato K.;
RA "Tyr15 is essential for the binding of omega-conotoxin MVIIC to the
P/Q-type calcium channel.";
RL Biochem. Biophys. Res. Commun. 214:305-309(1995).
CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
and block voltage-sensitive calcium channels (VSCC). This toxin
blocks N-type calcium channels as well as types of high-threshold
voltage-gated calcium channels resistant to both dihydropyridines
and omega-conotoxin GVIA.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
FAMILY.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
between the Swiss Institute of Bioinformatics and the EMBL outstation -
the European Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement (See http://www.isb-sib.ch/announcement/
or send an email to license@isb-sib.ch).
CC
CC -----
DR EMBL; S40826; AAB22674.1; -.
DR PIR; JH0699; JH0699.
DR PDB; 1QNN; 01-DEC-95.
DR PDB; 1QNN; 31-MAY-00.
KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW Hydroxylation; Amidation; 3D-structure.
FT NON_TER 1 1
FT PROPEP <1 2
FT PEPTIDE 3 28 OMEGA-CONOTOXIN MVIIC.
FT BINDING 15 15 ESSENTIAL FOR CALCIUM CHANNEL BINDING.
FT DISULFID 3 18

```

```

FT DISULFID 10 22
FT DISULFID 17 28
FT MOD_RES 9 9 HYDROXYLATION (PROBABLE).
FT MOD_RES 28 28 AMIDATION (G-29 PROVIDE AMIDE GROUP).
FT MUTAGEN 15 15 Y->A: HIGH DECREASE IN BINDING.
SQ SEQUENCE 29 AA; 3071 MW; AC7A68948474728A CRC64;

Query Match 59.8%; Score 112.5; DB 1; Length 29;
Best Local Similarity 73.1%; Pred. No. 2.2e-07;
Matches 19; Conservative 2; Mismatches 4; Indels 1; Gaps 1;

QY 5 CKGKGAKCSRLMYDCTGSC-RSGKC 29
||||| : ||||:|||||
Db 3 CKGKGAPCRKTYDCCSGSGRGKC 28

RESULT 10
CXOD_CONNA STANDARD; PRT; 29 AA.
ID CXOD_CONNA ID Q26350;
AC Q26350;
DT 15-DEC-1998 (Rel. 37, Created)
DT 15-DEC-1998 (Rel. 37, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Omega-conotoxin MVIID precursor (SNX-238) (Fragment).
OS Conus magus (Magus cone).
OC Eukaryota; Metazoa; Mollusca; Gastropoda; Caenogastropoda;
OC Neogastropoda; Conoidea; Conidae; Conus.
OX NCBI_TaxID=6492;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=94150815; PubMed=8107968;
RA Monje V.D., Haack J.A., Naisbitt S.R., Miljanich G., Ramachandran J.,
RA Nadasdi L., Olivera B.M., Hillyard D.R., Gray W.R.;
RA "A new Conus peptide ligand for Ca channel subtypes.";
RL Neuropharmacology 32:1141-1149(1993).
RN [2]
RP STRUCTURE BY NMR.
RX PubMed=9920728;
RA Civera C., Vazquez A., Sevilla J.M., Bruix M., Gago F., Garcia A.G.,
RA Sevilla P.;
RA "Solution structure determination by two-dimensional 1H NMR of
omega-conotoxin MVIID, a calcium channel blocker peptide.";
RL Biochem. Biophys. Res. Commun. 254:32-35(1999).
CC -!- FUNCTION: Omega-conotoxins act at presynaptic membranes, they bind
and block voltage-sensitive calcium channels (VSCC). This toxin
blocks channels of the N-type as well as other types.
CC -!- SUBCELLULAR LOCATION: Secreted.
CC -!- TISSUE SPECIFICITY: Expressed by the venom duct.
CC -!- SIMILARITY: BELONGS TO THE O-SUPERFAMILY OF CONOTOXINS. OMEGA-TYPE
FAMILY.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
between the Swiss Institute of Bioinformatics and the EMBL outstation -
the European Bioinformatics Institute. There are no restrictions on its
use by non-profit institutions as long as its content is in no way
modified and this statement is not removed. Usage by and for commercial
entities requires a license agreement (See http://www.isb-sib.ch/announcement/
or send an email to license@isb-sib.ch).
CC
CC -----
DR EMBL; S69322; AAB29902.1; -.
DR HSSP; P05484; LMVI.
KW Presynaptic neurotoxin; Neurotoxin; Toxin; Calcium channel inhibitor;
KW Amidation.
FT NON_TER 1 1
FT PROPEP <1 3
FT PEPTIDE 4 28 OMEGA-CONOTOXIN MVIID.
FT DISULFID 4 19
FT DISULFID 11 23
FT DISULFID 18 28
FT MOD_RES 28 28
SQ SEQUENCE 29 AA; 3104 MW; 9E04B2EA379CB22 CRC64;

Query Match 55.3%; Score 104; DB 1; Length 29;

```


SEQUENCE.
RA MEDLINE=94062828; PubMed=8243463;
RX Mackay E.A., Overnell J., Dunbar B., Davidson I., Hunziker P.E.,
RA Kaegi J.H.R., Fothergill J.E.;
RT "Complete amino acid sequences of five dimeric and four monomeric
RT forms of metallothionein from the edible mussel *Mytilus edulis*.";
RL Eur. J. Biochem. 218:183-194(1993).
RN [2]
RC SEQUENCE FROM N.A.
RP TISSUE=Digestive gland;
RX MEDLINE=98206055; PubMed=10190057;
RA Barsyte D., White K.N., Lovejoy D.A.;
RT "Cloning and characterization of metallothionein cDNAs in the mussel
RT *Mytilus edulis* L. digestive gland.";
RL Comp. Biochem. Physiol. 122C:287-296(1999).
CC -!- FUNCTION: THE METALLOTHIONEINS ARE INVOLVED IN THE CELLULAR
CC SEQUESTRATION OF TOXIC METAL IONS.
CC -!- SUBUNIT: MONOMER.
CC -!- INDUCTION: BY CADMIUM.
CC -!- SIMILARITY: BELONGS TO THE METALLOTHIONEIN SUPERFAMILY; FAMILY 2.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See <http://www.isb-sib.ch/announcement/>
CC or send an email to license@isb-sib.ch).
CC
DR EMBL; AJ005453; CAA06550.1; -
DR PIR; S39417; S39417.
DR InterPro; IPR003019; Metallthion.
DR Pfam; PF00131; metalthio:1.
DR PRINTS; PR00875; MTWOLLUSC.
KW Metal-binding; Metal-thiolate cluster; Cadmium.
FT INIT_MET 0
FT CONFLICT 21 21 D -> E (IN REF. 1).
SQ SEQUENCE 72 AA; 7022 MW; 7FA99D945C35DE19 CRC64;

Query Match 34.0%; Score 64; DB 1; Length 72;
Best Local Similarity 50.0%; Pred. No. 0.21;
Matches 14; Conservative 1; Mismatches 11; Indels 2; Gaps 2;

QY 5 CKGKAGKSRMLYDC-CTGSCRSKG-CT 30
DB 31 CSGADCKSGCKVKCKSGCEGKCT 58

RESULT 14
MT3_RAT
ID MT3_RAT STANDARD; PRT; 66 AA.
AC P37361;
DT 01-OCT-1994 (Rel. 30, Created)
DT 01-OCT-1994 (Rel. 30, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Metallothionein-III (MT-III) (Growth inhibitory factor) (GIF).
GN MT3.
OS Rattus norvegicus (Rat).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Rattus.
OX NCBI_TaxID=10116;
RN [1]
RP SEQUENCE FROM N.A.
RX MEDLINE=94018480; PubMed=8412560;
RA Kobayashi H., Uchida Y., Ihara Y., Nakajima K., Kohsaka S.,
RA Miyatake T., Tsuji S.;
RT "Molecular cloning of rat growth inhibitory factor cDNA and the
RT expression in the central nervous system.";
RL Brain Res. Mol. Brain Res. 19:188-194(1993).
RN [2]
RP SEQUENCE FROM N.A.
RC TISSUE=Glial tumor;

RA Amoureux M.C., Rethsaus E., Wurch T., Colpaert F.C., Pauwels P.J.;
RN Submitted (JUL-1995) to the EMBL/GenBank/DBJ databases.
RP [3]
RC SEQUENCE FROM N.A.
RA STRAIN=Sprague-Dawley;
RA Chapman G.A., Kille P.;
RL Submitted (SEP-1996) to the EMBL/GenBank/DBJ databases.
CC -!- FUNCTION: BINDS HEAVY METALS. CONTAINS ZINC AND COPPER ATOMS AND
CC ONLY A NEGLIGIBLE AMOUNT OF CADMIUM (BY SIMILARITY).
CC -!- TISSUE SPECIFICITY: BRAIN.
CC -!- SIMILARITY: BELONGS TO THE METALLOTHIONEIN SUPERFAMILY; FAMILY 1.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See <http://www.isb-sib.ch/announcement/>
CC or send an email to license@isb-sib.ch).
CC
DR EMBL; S65838; AAB28366.1; -
DR EMBL; X89603; CAA61762.1; -
DR EMBL; Y08235; CAA69404.1; -
DR HSP; P28184; LJT9.
DR InterPro; IPR003019; Metallthion.
DR Pfam; PF00131; metalthio:1.
DR PRINTS; PR00860; MTVERTEBRATE.
DR PROSITE; PS00203; METALLOTHIONEIN_VRT; 1.
KW Metal-binding; Metal-thiolate cluster; Zinc; Copper; Acetylation.
FT MOD_RES 1 1 ACETYLATION (BY SIMILARITY).
FT DOMAIN 1 30 BETA.
FT DOMAIN 31 66 ALPHA.
FT METAL 6 6 CLUSTER B (BY SIMILARITY).
FT METAL 8 8 CLUSTER B (BY SIMILARITY).
FT METAL 14 14 CLUSTER B (BY SIMILARITY).
FT METAL 16 16 CLUSTER B (BY SIMILARITY).
FT METAL 20 20 CLUSTER B (BY SIMILARITY).
FT METAL 22 22 CLUSTER B (BY SIMILARITY).
FT METAL 25 25 CLUSTER B (BY SIMILARITY).
FT METAL 27 27 CLUSTER B (BY SIMILARITY).
FT METAL 30 30 CLUSTER B (BY SIMILARITY).
FT METAL 34 34 CLUSTER A (BY SIMILARITY).
FT METAL 35 35 CLUSTER A (BY SIMILARITY).
FT METAL 37 37 CLUSTER A (BY SIMILARITY).
FT METAL 38 38 CLUSTER A (BY SIMILARITY).
FT METAL 42 42 CLUSTER A (BY SIMILARITY).
FT METAL 45 45 CLUSTER A (BY SIMILARITY).
FT METAL 49 49 CLUSTER A (BY SIMILARITY).
FT METAL 51 51 CLUSTER A (BY SIMILARITY).
FT METAL 62 62 CLUSTER A (BY SIMILARITY).
FT METAL 64 64 CLUSTER A (BY SIMILARITY).
FT METAL 65 65 CLUSTER A (BY SIMILARITY).
SQ SEQUENCE 66 AA; 6809 MW; BE7538E5664EBF8 CRC64;

Query Match 31.6%; Score 59.5; DB 1; Length 66;
Best Local Similarity 41.4%; Pred. No. 0.68;
Matches 12; Conservative 4; Mismatches 10; Indels 3; Gaps 2;

QY 5 CKGKAGKSRMLYDCCTGSCRSKG--KCTR 31
DB 20 CKCKGCKCTNCKKSCCS-CCPACGCKAK 47

RESULT 15
MT3_MOUSE
ID MT3_MOUSE STANDARD; PRT; 68 AA.
AC P28184;
DT 01-DEC-1992 (Rel. 24, Created)
DT 01-DEC-1992 (Rel. 24, Last sequence update)
DT 15-JUN-2002 (Rel. 41, Last annotation update)
DE Metallothionein-III (MT-III) (Growth inhibitory factor) (GIF).
GN MT3.

OS Mus musculus (Mouse).
OC Eukaryota; Metazoa; Chordata; Craniata; Vertebrata; Euteleostomi;
OC Mammalia; Eutheria; Rodentia; Sciurognathi; Muridae; Murinae; Mus.
OX NCBI_TaxID=10090;
RN [1]
RP SEQUENCE FROM N.A.
RC TISSUE=Brain;
RX MEDLINE=92335292; PubMed=1631128;
RA Palmiter R.D., Findley S.D., Whitmore T.E., Durnam D.M.;
RT "MT-III, a brain-specific member of the metallothionein gene family.";
RL Proc. Natl. Acad. Sci. U.S.A. 89:6333-6337(1992).
RN [2]
RP SEQUENCE FROM N.A.
RX MEDLINE=94314230; PubMed=8039715;
RA Naruse S., Igarashi S., Furuya T., Kobayashi H., Miyatake T.,
RA Tsuji S.;
RT "Structures of the human and mouse growth inhibitory factor-encoding
RL genes";
RL Gene 144:283-287(1994).
RN [3]
RP STRUCTURE BY NMR OF 32-68.
RX MEDLINE=21444630; PubMed=11560491;
RA Oz G., Zanger K., Armitage I.M.;
RT "Three-dimensional structure and dynamics of a brain specific growth
RT inhibitory factor: metallothionein-3.";
RL Biochemistry 40:11433-11441(2001).
CC -|- FUNCTION: INHIBITS SURVIVAL AND NEURITE FORMATION OF CORTICAL
CC NEURONS IN VITRO.
CC -|- FUNCTION: BINDS HEAVY METALS. CONTAINS ZINC AND COPPER ATOMS AND
CC ONLY A NEGLIGIBLE AMOUNT OF CADMIUM (BY SIMILARITY).
CC -|- TISSUE SPECIFICITY: BRAIN.
CC -|- SIMILARITY: BELONGS TO THE METALLOTHIONEIN SUPERFAMILY; FAMILY 1.
CC
CC This SWISS-PROT entry is copyright. It is produced through a collaboration
CC between the Swiss Institute of Bioinformatics and the EMBL outstation -
CC the European Bioinformatics Institute. There are no restrictions on its
CC use by non-profit institutions as long as its content is in no way
CC modified and this statement is not removed. Usage by and for commercial
CC entities requires a license agreement (See [http://www.isb-sib.ch/](http://www.isb-sib.ch/announce/)
CC or send an email to license@isb-sib.ch).
CC
CC EMBL; M93310; AAA39529.1; -;
DR EMBL; S72046; AAB31397.1; -;
DR PIR; A46034; A46034.
DR PDB; 1JI9; 03-OCF-01.
DR MGD; MGI:97173; Mt3.
DR InterPro; IPR000006; Metallthion_vert.
DR Pfam; PF00131; metalthio; 1.
DR PRINTS; PR00860; MTVERTEBRATE.
DR PROSITE; PS00203; METALLOTHIONEIN_VRT; 1.
KW Metal-binding; Metal-thiolate cluster; zinc; Copper; Acetylation;
3D-structure.
FT MOD_RES 1 1 ACETYLATION (BY SIMILARITY).
FT DOMAIN 1 30 BETA.
FT DOMAIN 31 68 ALPHA.
FT METAL 6 6 CLUSTER B (BY SIMILARITY).
FT METAL 8 8 CLUSTER B (BY SIMILARITY).
FT METAL 14 14 CLUSTER B (BY SIMILARITY).
FT METAL 16 16 CLUSTER B (BY SIMILARITY).
FT METAL 20 20 CLUSTER B (BY SIMILARITY).
FT METAL 22 22 CLUSTER B (BY SIMILARITY).
FT METAL 25 25 CLUSTER B (BY SIMILARITY).
FT METAL 27 27 CLUSTER B (BY SIMILARITY).
FT METAL 30 30 CLUSTER B (BY SIMILARITY).
FT METAL 34 34 CLUSTER A (BY SIMILARITY).
FT METAL 35 35 CLUSTER A (BY SIMILARITY).
FT METAL 37 37 CLUSTER A (BY SIMILARITY).
FT METAL 38 38 CLUSTER A (BY SIMILARITY).
FT METAL 42 42 CLUSTER A (BY SIMILARITY).
FT METAL 45 45 CLUSTER A (BY SIMILARITY).
FT METAL 49 49 CLUSTER A (BY SIMILARITY).
FT METAL 51 51 CLUSTER A (BY SIMILARITY).

FT METAL 64 64 CLUSTER A (BY SIMILARITY).
FT METAL 66 66 CLUSTER A (BY SIMILARITY).
FT METAL 67 67 CLUSTER A (BY SIMILARITY).
SQ SEQUENCE 68 AA; 7009 MW; 791AF60E38FED3CA CRC64;
Query Match 31.68; Score 59.5; DB 1; Length 68;
Best Local Similarity 41.48; Pred. No. 0.69;
Matches 12; Conservative 4; Mismatches 10; Indels 2;
QY 5 CKKGAKGKSRMLYDCTGSCRS--KCTR 31
|| || ||: ||: | : | : | :
Db 20 CKCKGCKCTNCKKSCCS-CCPAGEKCAK 47
Search completed: March 17, 2003, 07:24:18
Job time : 6.83969 secs